

Math 6/8300 — Fall 07 — Course Outline

Welcome to abstract algebra! The purpose of this course is to lay one of the foundation stones for mathematical research. Algebra, analysis, and topology together support the enormous edifice of modern mathematics.

Text and syllabus

We will use *Abstract Algebra*, 3rd edition, by David Dummit and Richard Foote. In this first semester we will aim to cover most of the material needed for the qualifying exam in algebra: the integers; fields, vector spaces, and polynomials; groups and Galois theory; principal ideal domains; radicals and semisimplicity. This material is covered in chapters 0–14 in the text. However, we will not cover all of the material in these chapters. Moreover, we will at various times need to supplement the text.

In the second semester we will cover various special topics in depth: Dedekind domains; homological algebra; permutation groups; and representations of finite groups. This is the content of chapters 15–19 in the text.

Calendar

<i>Labor day</i>	Mon	3 Sep	
<i>Last day to drop</i>	Tue	4 Sep	
Midterm Exam	Thu	11 Oct	
<i>Fall break</i>	Mon–Tue	15–16 Oct	
<i>Last day to withdraw</i>	Fri	26 Oct	
<i>Veteran's day</i>	Mon	12 Nov	
<i>Thanksgiving</i>	Wed–Fri	21–23 Nov	
Final Exam	Fri	14 Dec	12:30–14:30

Exercises

Every Thursday There will be due an exercise set of 10 problems. Each problem will be worth 2 points. You will earn 0 points if your proof is not convincing; 1 point if your proof is convincing but clumsy; 2 points if your proof is both convincing and efficient. Your 5 best exercise sets count towards your final grade.

Exams

There will be midterm exam and a final exam. Each exam will include all of the material we have covered to that point.

Grades

One third of your final grade is determined by the exercises and one third by each of the two exams.